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ABSTRACT

The seven articles in this document concern children, programs, and teachers in the middle grades. The first article, "Essential Elements of Effective Middle Level Education" (C. K. McEwin) serves as an overview of the subsequent articles. "Middle Schools; A Re-Appraisal" (H. E. Sadoff) cautions educators against assuming that a school structure simply labeled "middle school" is automatically an answer for all the issues of early adolescent education. The next two articles, entitled "North Carolina Middle School Teachers Rate Their Preservice Programs and Their First Year of Teaching" (J. Gretes, J. A. Queen, and K. Daguano) and "The Teacher in the Middle" (D. A. Butler), reveal first year teachers' perception of training needs for sucessful teaching and identify characteristics needed by effective middle level teachers. "You Are What You Eat: Diet and Academic Performance" (M. Strubbe) reports on the consequences of poor diet for preadolescent children. The final two articles focus on mental maturation in early adolescence. "Research and Logical Reasoning of Middle School Students" (M. J. Wavering) discusses what middle school educators should expect from students as logical reasoners and suggests implications for developmental stages of instruction. Ways any adult might help the middle grade child move from concrete experiences to abstract understanding are described in "The Middle School Years: A Time to Look Ahead" (T. S. Dickinson). (RH)

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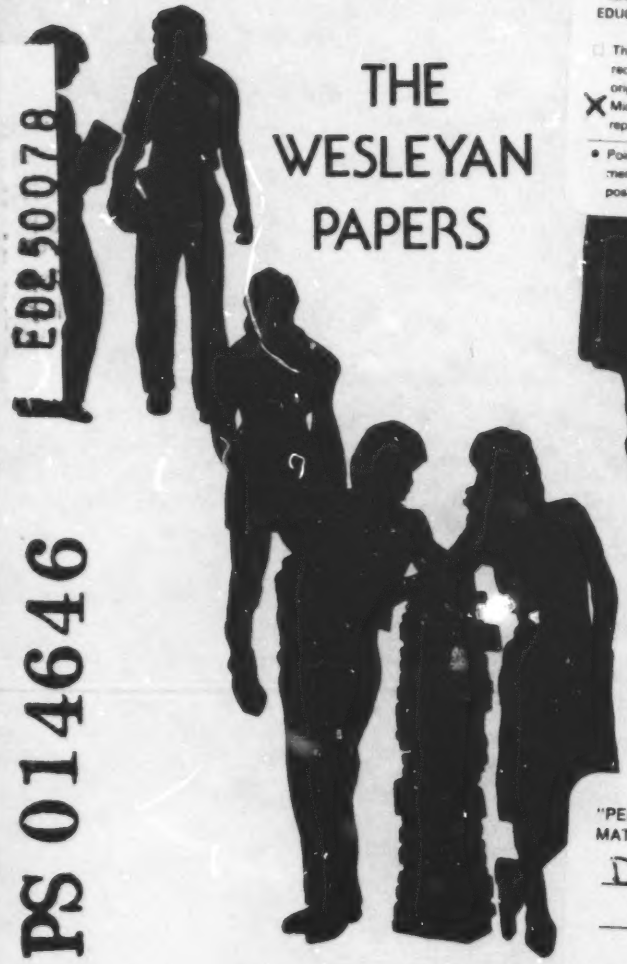

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In The Middle

Perspectives on Transescence and Middle School Education

THE WESLEYAN PAPERS

In the Middle:

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and

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This edition is
dedicated to
middle level educators,
present and future,
who strive to educate
our kids in the middle.

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Editor's Note

In the Middle: Perspectives on Transescence and Middle School Education is the second volume in the series of THE WESLEYAN PAPERS, published by North Carolina Wesleyan's Department of Education. Our first edition, Keeping the Child in Childhood, published in June, 1983, was devoted to timely themes in early childhood education, but those authors whose articles appear in this year's edition address topics of concern for an older group--the early adolescent.

All the articles in this edition describe data about or speculations on middle grades children, programs, and teachers. Sometimes our individual voices argue, sometimes we complement each other's thinking. Even though the articles share a range of ideas, every piece focuses finally on children in the middle with a single aim behind each--to influence the best education possible for early adolescents.

Dr. C. Kenneth McEwin, Professor of Education at Appalachian State University in North Carolina, has long been an advocate of quality middle level education. As a professor, a widely known consultant, and past President of the National Middle School Association, Dr. McEwin speaks with great experience about middle school education in the subsequent article. His discussion of the "components of successful middle level schools" here serves as a comprehensive overview in relation to the remaining articles in the collection.

Essential Elements of Effective Middle Level Education

by

C. Kenneth McEwin

Good schools for early adolescents have been a goal of American education since the turn of this century. Two movements--first the junior high school and later the middle school--have attempted to establish a special level of schooling based on what is known about the developmental needs and interests of early adolescents. Doubtless, this goal has been successful so far as numbers of special, separate schools are concerned. Currently, there are more than 11,000 middle grade schools in the United States (U.S. Department of Education).

During the first years of the junior high school movement, almost without exception, these schools consisted of grades 7-9. Since the 1960's, however, the middle school movement has experienced much growth and the number of 7-9 schools has declined. For example, there were 6,606 junior high schools in 1964 and only 3,340 remained in 1983 (Van Til, Vars, & Lounsbury, 1967; U.S. Department of Education, 1983). These changes were brought about by a multiplicity of causes, not all directly related to efforts to improve middle level education.

The reasons for the changes and their varied results are less important than the fact that both movements advocate essential elements that remain largely unrealized in many schools, regardless of their grade organization or title. Although not the sole determiner of success, the grade organization of middle level schools is important. When possible, patterns that group early adolescents in a separate

school are desirable. This arrangement allows a teacher's full attention on meeting the unique needs of early adolescents. Generally, the 6-8 grade organization is considered the ideal plan (Valentine, Clark, Nickerson & Keefe, 1981).

The quality of the learning experiences for students is certainly more important than titles or movements. Examination of the essential elements advocated by both the junior high and middle school movements reveals that they do not differ significantly. Nor do they contradict each other or what current research and successful practice identify as appropriate today. The longstanding problem regarding the absence of high quality lies primarily in the failure to understand what constitutes quality instructional programs by those responsible for those programs. What is lacking in many middle level schools is the recognition of the crucial importance of basing curricular decisions on the developmental realities of early adolescence. The remainder of this article focuses on identifying some of the components of schooling that recognize these realities and provide programs that are in tune with the needs and interests of early adolescents. Space limitations do not permit a full discussion of all components of successful middle level schools. However, selected readings that provide more detailed information are listed at the end of the article.

Developmental Guidance Programs

A developmental guidance program, including a carefully planned teacher-based guidance component, (advisor-advisee) is essential. Early adolescents experience many traumatic changes in physical, intellectual, and social/emotional development, and need help from both guidance counselors and teacher advisors who know them well. The secure days of childhood are being superseded by the insecurities and unpredictabilities of early adolescence. Middle level students need the security of knowing that one special teacher is there to provide understanding and support. While the importance of such guidance has been recognized for many years, it usually has been considered the sole responsibility of the guidance counselors.

The concept of teacher-based guidance had its beginnings in the junior high school movement, often referred to as the homeroom program. When homeroom

guidance first began in junior high schools, it was 20 to 30 minute periods set aside for teacher directed activities. However, in recent years the majority of these programs have been shortened to about 10 minutes with most of the time spent on non-guidance activities (i.e. making announcements, raising project funds, and the like). The fact that about one-third of middle and junior high schools have advisory programs suggests that the practice remains an important part of the curriculum of many schools (McEwin & Clay, 1982).

Teacher-based guidance, in conjunction with other guidance programs and activities, provides support for students as they move from the protective atmosphere of elementary school to new, more impersonal environments. One need only note the difficulties being experienced by this age group to recognize the importance of quality developmental guidance opportunities for all students in this developmental stage.

Basic Skills and Knowledge

The areas of basic skills and knowledge remain key components of middle level instructional programs. Most middle level students spend from one-half to two-thirds of the school day in traditional subject classes. The 1982 McEwin and Clay national survey reported that the basic subjects of mathematics, science, social studies, and language arts were required at all grade levels in more than 98 percent of schools surveyed, with the exception of ninth grade (86%).

The lessening of emphasis on basic traditional subjects should not, and simply has not, occurred in the vast majority of middle level schools. Nevertheless, there appears to be constant pressure to limit the educational focus to the so call "basics" (reading, writing, and arithmetic). While these academic areas are, and should remain, essential components of middle level curriculum, instruction should not be limited solely to basic skills and subjects.

Interest Development and Exploration

Effective middle level programs provide students with many opportunities to explore current interests and develop new ones. Effective schools offer experiences that promote a wide variety of social, cultural, civic, vocational, and recreational interests. Promotion of such goals includes the establishment of exploratory courses, special interest activities, independent study programs, and interests clubs. More

traditional programs such as home economics and industrial education are also often considered a part of the exploratory program. The arts (i.e. instrumental music and drama courses) are also important components of the exploratory aspect of middle level curriculum.

Variety and significant student participation in design and selection are attributes common to successful exploratory programs. These programs have the potential to improve middle level schooling in many ways. Expansion of the curricular program and added opportunities for students to explore a multitude of interest areas are examples of major benefits to be gained. These and related experiences allow students to make better choices regarding future decisions that effect their personal lives as well as their academic interests.

The importance of the exploratory aspects of middle level curriculum has been recognized for many years and is based on early adolescent needs and interests. These components must not be neglected because of pressure by outside forces to eliminate the "frills" in education. These curriculum components are integral to the total program of effective middle level schools.

Appropriate Social Experiences

Social experiences take on more significance during early adolescence. These social experiences must be carefully planned and implemented, and based on the needs and interests of early adolescents. They should not simply emulate those of the senior high school. Since these youth are at many different stages of development, maturity factors should be considered carefully when social activities are planned. Middle level students are experiencing dramatic and sometimes traumatic needs in adjusting to new and little understood social roles. If overly sophisticated and highly competitive activities (i.e. interscholastic sports, marching bands, proms) predominate, many early adolescents will experience difficulties. Activities that promote the acquisition of social skills and minimize elitism allow students to develop in a socially positive manner.

Comprehensive Health, Physical Education and Sports Programs

Emphasizing physical education, health, and sports programs during the middle years is supported by the

extensive physical changes experienced by the age group. Further, programs that increase students' understanding of physical maturation and its implications should be central to such programs.

Successful middle level programs stress physical education and intramural programs and de-emphasize if not eliminate, interscholastic sports programs. The wide range of physical, emotional, and social characteristics of this age group suggests that emphasis should be placed on extensive involvement in physical education, intramural activities, lifetime sports and leisure time activities.

It is clear that middle level students are especially prone to injury when involved in interscholastic sports programs (McEwin, 1981). Because of these and other concerns, a number of schools and school systems have eliminated interscholastic sports programs below eighth grade. The 1982 McEwin and Clay survey found that such programs existed in 10 percent of fifth grades, 25 percent of sixth grades, over 70 percent of seventh grades, and over 85 percent of eighth grades in middle and junior high schools surveyed. Early adolescence is also a time of growing interests in health and related topics. Therefore, health, whether a part of the physical education program or some other part of the curriculum, should receive high priority at the middle level.

Provision for Continuous Progress

A central purpose of the middle level school is the provision of a bridge between the elementary school and the senior high school. To provide for this transition, effective middle level schools expend much effort providing opportunities for continuous progress. Steps are taken to help each learner move continuously and smoothly along the educational ladder. Although continuous progress is a long sought after and much discussed goal of education, it is seldom fully achieved. Effective schools, however, continually strive to reach this goal through activities and instruction that encourage optimum individual progress.

Considering the great diversity of learning and developmental needs of early adolescents, provisions for continuous progress through individualized instruction and other strategies are essential. These goals have been accomplished by exemplary middle schools across the nation.

Conclusion

While space limitations preclude a full discussion of all important components of middle level education, there are certainly others that contribute to the establishment of successful schools for young adolescents (i.e. flexible scheduling and grouping, team organization, a comprehensive evaluation plan). Though the movement to establish middle level schools based on what is known about the developmental period of early adolescence has not been a complete success, progress has occurred in the last two decades. Unfortunately, too many middle level schools remain little more than pale shadows of senior high schools.

Attention and concentrated efforts must be focused on making learning experiences more appropriate for these youth. The price of avoidance is high. Much remains to be accomplished if quality learning experiences are to be widely available to all middle level students. The knowledge of how these schools should be established and operated is available and has been demonstrated in exemplary middle level schools for many years. Sustained progress, however, still awaits the combined efforts of those responsible for the education and welfare of early adolescents.

References

McEwin, C.K. Interscholastic sports and the early adolescent. Journal of Early Adolescence, 1981, 1, 123-133.

McEwin, C.K. & Clay R. Middle Level Education in the United States: A National Comparative Study of Practices and Programs of Middle and Junior High Schools. Boone, NC: Appalachian State University, 1982.

United States Department of Education, Statistical Information Office, 1983.

Valentine, J., Clark, D., Nickerson, N. & Keefe, J. The Middle Level Principalship: A Survey of Middle Level Principals. Reston, VA: National Association of Secondary School Principals, 1981, Vol. I.

Van Til, W., Var, G.F. & Lounsbury, J.H. Modern Education for the Junior High School Years. Indianapolis, IN: The Bobbs Merrill Company, Inc., 1967.

Suggested Additional Readings

Alexander, W.M., McEwin, C.K., and others. Students in the Middle and Their School. Boone, NC: North

Carolina League of Middle/Junior High Schools, 1983.

Alexander, W.M. & George, P.S. The Exemplary Middle School. New York: Holt, Rinehart and Winston, 1981.

George, P.S. The Theory Z School: Beyond Effectiveness. Columbus, OH: National Middle School Association, 1983.

George, P.S. & Lawrence, G. A Handbook for Middle School Teaching. Glenview, IL: Scotts, Foresman and Company, 1982.

Kindred, W. and others. The Middle School Curriculum: A Practitioner's Handbook. Boston: Allyn and Bacon, 1976.

Lipsitz, J.S. Successful Schools for Young Adolescents. New Brunswick: NJ: Transaction Books, 1984.

McEwin, C.K. Establishing Teacher-Advisory Programs in Middle Level Schools. Journal of Early Adolescence. 1981, 1, 337-347.

McEwin, C.K. Schools for early adolescents. Theory Into Practice., 22, (Spring, 1983), 119-124. (This issue is a special one devoted to early adolescence).

This We Believe. Columbus, OH: National Middle School Association, 1982.

In the following article, Dr. Harvey Sadoff, Assistant Professor at the University of North Carolina at Charlotte, cautions educators against assuming that a school structure simply labelled "middle school" is automatically an answer for all the issues of early adolescent education. His assertions will surely provoke further thought and raise more questions about what middle level education can and ought to be.

Middle Schools - A Re-Appraisal

by

Dr. Harvey E. Sadoff

The "middle school movement" has finally emerged upon us full-blown. Having built up its momentum for the past twenty years, it is now moving down the track at full speed. Principals and superintendents talk about this new "concept", school boards approve school reorganizations, and teaching certificates are modified to reflect this new idea. At this point, to suggest that we might be moving in the wrong direction or simply going in circles is heresy, but I am going to do just that.

But let me start at the beginning. Middle school advocates have been saying for decades that the junior high school has failed and that a new school designed to meet the needs of early adolescents is needed. It is said that junior high schools have become miniature senior high schools and are not serving their clientele effectively. Furthermore, children are developing faster and reaching puberty at an earlier age. This special age group needs guidance and specially trained teachers to help them over the trauma of preadolescence. Finally, there is a fundamental assumption that some sort of school should exist to ease the transition between basically self-contained primary programs and the departmentalized senior high schools.

These ideas appear and reappear in the ballooning middle school literature. It has been my observation that, as time wears on, these sorts of statements of opinion become a litany and take on the aura of axioms-basic, unchallenged postulates-- which give the appearance of being fact. The fundamental assumption seems to be that some type of special school should exist, it is only the organization of the program that is

open for discussion. Unfortunately, the rationale for middle schools sounds more like justification. That is, looking with an open mind at the basic issues and concerns related to the education of early adolescents, one is led to other conclusions.

The major area of justification for the middle school is based on development. Here is a typical statement:

> Underlying this acceptance of the concept of intermediate education is the recognition that early adolescence is a distinct stage of development. Between childhood and adolescence is a period of transition during which substantial changes in physical, social, emotional, and intellectual aspects of life occur. Although each individual undergoes these transformations, the specific time and duration of the transition differs widely. (Lounsbury and Vars, 1978, pp. 24-25).

A hundred years ago, we are told, there was no concept of adolescence--just childhood and adulthood. Now we have infancy, early childhood, early adolescence, late adolescence, young adulthood, midlife, and the aged. Each "stage" has its own experts. By creating all these categories we tend to lose sight of the continuous progress of development and its varying rates. And certainly, when the writers of the above-mentioned quote go on to say, "A separate institution staffed with adults who are sensitive to these changes and committed to helping young people deal with them can best serve students during these formative years", (Lounsbury and Vars, 1978, p. 25) I cannot help feeling that this can be said about any age group.

Just because a group exists with some identifiable characteristics, does it necessarily follow that this group needs a separate institution? I think not. (And, by the way, Lounsbury and Vars believe that the common characteristic of this age group is its diversity and lack of similarity!) Teachers and educational planners should be aware of growth and development, but it does not seem logical that this means that the organizational structure of schools should reflect these needs. More likely, it should be reflected in curriculum, instruction, and guidance.

If we were to pursue the idea of using developmental differences to determine school structure, the logical conclusion would be to get away from a rigid

age grade pattern, a solution seldom offered in the literature. For example, if we identify differences in cognitive development along the lines that Piaget has described, we ought to group children into classes of concrete operational, transitional, and formal thought. If puberty is indeed an aspect of development which affects school performance, maybe we should group children accordingly, or separate post-pubescent children by gender so that they are not distracted. Rigid grouping by age certainly does not make sense from a developmental standpoint.

But, to reiterate, we are faced with a situation where middle schools and a graded, departmentalized structure are the givens, and ideas are molded to fit this pre-ordained system. For example, Wiles and Bondi (1981) list as a characteristic of emerging adolescents that, "Students are confused and frightened by new school settings." (p. 27) The solutions they propose are, "Orientation programs and 'buddy systems'... (to) reduce the trauma of moving from an elementary school to a middle school." (p. 27) If this is a developmental problem, it seems more logical not to move them at all than to provide strategies to help them adjust. To go further, it is entirely possible that some of the pre-teen behavior we see in junior high schools which cause us to say that they failed, is a result of children being junior high schoolers! They live up to the expectations of the system. It is very important to remember that school is a culture with its own norms and behaviors.

It is for this very reason that junior high schools have become like high schools. In the public's mind, a school is either elementary-style with self-contained classes or high school-style with departmentalization. If it is departmentalized, it should have interscholastic teams, cheerleaders, proms, and so on. It may very well be that some of the behavior characteristic of early adolescence is actually caused by or at least facilitated or accentuated by putting them in a separate institution designed to meet their needs.

Lounsbury and Vars (1978) hit upon this when they state that "Inevitably and inexorably the 'label' of the school, its public image, and its student body influence, both overtly and unconsciously, the general nature of the program." (p. 25) Unfortunately, their conclusion is, "This is one reason why the new label 'middle school,' may have much importance". (p. 25) I do not think that the public can be fooled so easily. Regardless of changes in age placements

or even in internal structure, the public will see the middle school as another form of junior high school.

This progression from a self-contained to departmentalized structure has also spawned the idea that a school should exist between elementary and secondary in order to make this transition easier. I have never seen anyone test out this hypothesis to determine how traumatic this adjustment is. Furthermore, there is nothing sacred about a departmentalized structure in the upper grades. It developed by historical accident. The developmental needs of pre-adolescence seems to suggest a need for more security and a closer personal contact with one teacher rather than an impersonal contact with five. But, again, the die is cast. I once had a middle school principal tell me that departmentalization is designed "to meet the developmental need of teenagers to socialize". This, I am sure you will agree, is absurd. Departmentalization has several very severe educational drawbacks as well. For one, academic achievement is directly related to on-task behavior and a great deal of instructional time is wasted on moving children about from room to room. Secondly, incidents of violence and disruption most often occur in unsupervised and usually crowded areas. Ianni and Reuss-Ianni (1980) report that "control of students was easier in classrooms, where students can be identified as individuals, than in the disorder of the halls and stairs during change of classes." (p. 21)

The conclusions that I have come to as a result of rethinking the basic premises about middle schools are:

1. There seems to be little justification for a <u>separate</u> educational facility for this age group. Perhaps the failure of junior high schools has shown this.
2. That it is possible that separate educational institutions for early adolescents might encourage and actually condone the very behaviors we find difficulty with. It may be that we are pushing children into this culture at too young an age.
3. That the educational program for early adolescence should be closer to a self-contained structure than a departmentalized one in order to increase supervision,

promote closer contact with an adult, make guidance more effective, and provide more instructional time.

I am convinced that the current trend to convert junior high schools to middle schools is missing the point and perhaps actually making matters worse by forcing children into adolescent culture too soon. Because fifth and sixth graders seem more sophisticated, this does not mean they are.

References

Brown, W.T., "The Making of the Middle School: 21 Key Ingredients." Principal, January, 1981, 60(3): 18-19.

Cohen, M. "Effective Schools: Accumulating Research Findings." American Education, January 1982, 18(1): 13-16.

DeVita, J.C., Pumerantz, P., & Wilklow, L.B. The Effective Middle School. West Nyack, N.Y.: Parker Publishing, 1970.

Ianni, F.A., & Reuss-Ianni, E. "What Can Schools Do About Violence." Today's Education, April, 1980, 69(2): 20-23.

Lounsbury, J.H., & Vars, G.F. A Curriculum for the Middle School Years. New York: Harper & Row, '78.

McGlasson, M. The Middle School: Whence? What? Whither? Bloomington, Ind.: Phi Delta Kappa, 1973.

Thornburg, H.D. "Developmental Characteristics of Middle Schoolers and Middle School Organization." Contemporary Education, Spring, 1981, 53(3): 134-138.

Wiles, J., & Bondi, J. The Essential Middle School. Columbus, Ohio: Charles E. Merrill, 1981.

The following two articles address the needs of middle level teachers--but from two widely different perspectives. In the first article, Drs. Gretes, Queen, and Daguano share research findings gleaned from a large sample of first year middle grades teachers who revealed specifically perceived needs for teaching. In the second article, dialogue with colleagues as well as personal experiences and observations form the basis for a personal statement about the characteristics needed by an effective middle level teacher.

North Carolina Middle School Teachers Rate Their Preservice Programs And Their First Year of Teaching

by

John A. Gretes, J. Allen Queen,
and Karen Daguano

Abstract

This article is based on a survey given to first year middle grade teachers in North Carolina. Four hundred and sixty-six responded to the survey which investigated their pre-service programs in relation to their first year of teaching. Comparisons are made between responses of middle grade teachers and teachers at other levels. When asked what could have been added to their college program to make it more valuable, middle school teachers identified survival skills and more field experiences earlier in their academic experiences. They also reported feeling less than adequate in working with learning disabled and gifted and talented students. As a group they identified their student teaching and methods courses as the most valuable aspects of their preservice programs.

First year middle school teachers perceived survival skill training as the major element needed to have made their pre-service program more valuable to their first year of teaching. They mentioned a need for such topics as record keeping, classroom management, and parent/teacher conferences. In

addition, training in developing positive relationships with administrators and supervisors should be included in pre-service programs. These same teachers rated their cooperating teachers and university supervisors as providing good role models during their pre-service programs. The majority of first year middle school teachers reported being satisfied with their teaching positions. This group gave low marks to their colleges and universities for providing little assistance in locating their first teaching position. In addition, many reported receiving less than satisfactory preparation for working with disabled students and classroom behavior problems.

The findings reported here are based on data collected from a survey sent to all first year teachers in North Carolina during the 1980-1981 school year. Teachers were asked to reflect on their first year of teaching during the 1979-1980 school year and their respective pre-service programs. Of the 63 percent of the population who responded, nearly 25 percent or 446 were middle school teachers with class A North Carolina certification in intermediate education and were teaching in grades 6-8. The following report will focus on the data collected from the 446 first year middle school teachers and how these data compare with data reported by first year teachers in North Carolina teaching at different grade levels.

Of those responding to the survey, 74 percent were female, and 26 percent were male. When compared to other groups, the middle school teachers consisted of twice as many males as the elementary and primary groups. In contrast, the high school group contained 64.1 percent females and 35.9 percent males.

Teachers were asked to respond to two types of items. The first group of items consisted of fifteen statements, and the respondents were asked to strongly disagree, disagree, respond in a neutral fashion, agree, or strongly agree. The second set of items included two open ended questions which allowed a narrative response.

Table 1 includes the fifteen items to which the first year teachers were asked to respond and the responses of the middle school teachers by percent. The response percentages are divided into three groups: (1) disagree, strongly disagree, (2) neutral and (3) agree, strongly agree.

In response to item one, greater than 55 percent agreed their pre-service programs had adequately

TABLE 1

First year middle school teachers responses, by percent to fifteen items dealing with their pre-service programs and their first year of teaching.

	Disagree/ Strongly Disagree	Neutral	Agree/ Strongly Agree
1. The teacher education program at my college adequately prepared me for my first year of teaching.	24.4	20.0	55.6
2. My teacher education program enabled me to work effectively with learning disabled children.	48.2	27.1	24.7
3. My teacher education program adequately prepared me for dealing with behavior problems in the classroom.	48.2	24.9	26.9
4. My teacher education program adequately prepared me to work with talented and gifted student.	42.8	26.9	30.3
5. My college supervisor played an effective role in my student teaching experience.	24.2	20.4	55.4
6. My college supervisor observed my practice teaching on a regular basis.	22.4	15.9	61.7
7. My cooperating teacher was a good role model for me during my student teaching.	13.3	11.0	75.7
8. Information gained in my methods courses was very helpful to me during my first year of teaching.	24.0	21.7	54.3
9. Information gained in my content courses was very helpful to me during my first year of teaching.	19.7	22.9	57.4
10. My college program helped give me a realistic perspective of what my first year of teaching would be like.	47.5	24.9	27.6
11. As a first year teacher, I felt inferior to more experienced teachers.	49.1	26.0	24.9
12. My college helped me locate my first year teaching position.	71.7	10.8	17.5
13. I am very satisfied with my first year teaching position.	9.4	16.4	74.2
14. I would advise other interested students to pursue an education degree.	15.3	24.2	60.5
15. I plan to stay in my classroom teaching position permanently.	23.1	25.8	51.1

prepared them for their first year of teaching, while 24 percent disagreed. More than 48 percent of those responding felt less than an adequate job had been done by their program in preparing them to work with learning disabled students (item 2). The same percentage (48 percent) also disagreed with item three. Only 30 percent of those responding to item four agreed they had been prepared adequately to work with talented and gifted students. In item five, more than 55 percent agreed their college supervisor had played an effective role in their student teaching experience. When responding to item six, more than 61 percent agreed their supervisor had visited with them on a regular basis. Almost 76 percent agreed their cooperating teachers had been good role models during their student teaching experience. Only 13.3 percent disagreed with item seven. It was agreed by 54.3 percent that methods courses (item 8) supplied information helpful to the teachers during their first year of teaching. Greater than 57 percent agreed that content courses had supplied very helpful information to them for their first year of teaching (item 9). Only 27.6 percent agreed their college program gave them a realistic perspective of what their first year of teaching would be like, while 47.5 percent disagreed with item ten. Only 24.9 percent agreed that as a first year teacher they felt inferior to more experienced teachers while 49.1 percent disagreed (item 11). More than 71 percent disagreed with item twelve and only 17.5 percent agreed their college had helped them locate their first year teaching position. More than 60 percent reported they would advise other interested students to pursue an education degree (item 14). In responding to item 15, 23.1 percent disagreed and 51.1 percent agreed they would stay in their classroom teaching position permanently.

Tables 2 and 3 display data collected and based on their response to the two open-ended questions. The open-ended responses to each question were then identified under one of several factors.

When asked what was the most valuable aspect of their pre-service program in preparing them for their first teaching job, 46.4 percent of the middle school teachers identified some aspect of their field experience. Responses to this question included such aspects as classroom observation, tutoring individuals and small groups, pre-student teaching experiences, and student teaching.

TABLE 2
Group Responses, By Percent, To the Open-Ended Question:
"What Was the Most Valuable Aspect of Your
Pre-Service Program in Preparing You
For Your First Year of Teaching?"

Question Response Factors	First Year Teacher Group: Primary (K–3) (N=499)	Elementary (4–5) (N=273)	Middle School (6–8) (N=446)	High School (9–12) (N=421)	Other (Spec. Teac.) (N=153)
Field Experience	61.3	55.3	46.4	43.2	51.6
Methods Courses	20.4	22.7	21.5	21.9	26.8
Content Courses	.8	2.9	5.2	9.0	2.0
Specific Person	7.4	7.7	12.8	11.2	11.1
No Response/ Other Response	10.1	11.4	14.1	14.7	8.5

TABLE 3
Group Responses, By Percent, To the Open-Ended Question:
"What Could Have Been Added To Your Pre-Service
Program To Have Made It More Valuable
To You As A First Year Teacher?"

Question Response Factors	First Year Teacher Group: Primary (K–3) (N=499)	Elementary (4–5) (N=273)	Middle Grade (6–8) (N=446)	High School (9–12) (N=421)	Other (Spec. Teachers) (N=153)
More Field Experiences	43.5	32.6	31.8	35.4	33.3
More Courses	10.6	16.8	11.7	10.0	11.1
Survival Skills	26.3	26.7	33.9	26.4	30.1
Increased Feedback	6.6	9.5	8.7	12.4	11.1
No Response/ Other Response	13.0	14.4	13.9	15.8	14.4

Methods courses were identified as the second most valuable aspect by 21.5 percent of those responding. Third ranking went to the identification of a specific person (12.8%) such as a cooperating teacher, content or methods instructor, advisor, or another specific person mentioned by name or title. Content courses ran a distant fourth with only 5.2 percent of those responding identifying them as the most valuable aspect of their pre-service programs.

Table 2 provides a basis for comparison between the responses of the middle school teachers and other teachers to the question, "What was the most valuable aspect of your pre-service program in preparing you for your first teaching job?" The middle school teachers valued field experiences more than the high school teachers and less than the primary teachers and elementary teachers. These teachers valued methods courses about the same as the other groups. Content courses were valued by the middle school teachers more than by the primary and elementary teachers and somewhat less than the high school teachers. Middle school teachers identified specific persons as being the most valuable aspect of their pre-service program more often than primary, elementary, or high school teachers.

When asked what single thing could have been added to their pre-service program to make it more valuable to them as first year teachers, 33.9 percent of the middle school teachers identified survival skills training as the number one component which could have been added. More field experience came in second place, with more courses and increased feedback running third and fourth respectively.

Table 3 displays response percentages for all four groups to the question, "What single thing could have been added to your pre-service programs to make it more valuable to you as a first year teacher?" The middle school group identified survival skills as their number one response while all three of the other groups identified more field experience as their number one choice. Other than the identification of survival skills and more field experience as first and second choices by the middle school teachers, they identified more courses and increased feedback at about the same frequency as did the other three groups of teachers.

Based on the data presented in Table 2 the first year middle school teachers, more than the other three groups of teachers, saw a strong need for the inclusion of survival skills training in their pre-service

programs. They see survival skills as being more important to them than an increase in field experience at the pre-service level.

Discussion

One reason for the middle school teachers reporting survival skills as the number one component which could have been added to their pre-service program to make it more valuable could be that many of these teachers did not receive specific preparation for teaching in a middle school setting. Since they are certified in North Carolina for grades 4-9, it is logical that such specific preparation does not take place. Only the 4-9 certified teachers actually teaching in grades 6-8 reported survival skills as number one. According to the percentages reported here, this same group saw more field experience as being second in importance while all other groups reported more field experience as being most important. The middle school teachers did want more field experience added to their programs, and they pointed out that the experience should be started earlier in the program and last longer.

The two additions most frequently identified, survival skills and more field experience, coupled with the 47.5 percent who reported not being given a realistic perspective about their first year of teaching by their pre-service program, appear to complement one another. Based on the responses to the survey,the survival skills, or at least a portion of them, might include subtopics such as working with learning disabled students, gifted and talented students, as well as classroom management of behavior problems, all specific to middle school settings.

The more than 71 percent who reported having little help from their college in locating their first teaching job were extremely vocal about their displeasure. Many of these teachers wrote lengthy comments directly on the survey form. They pointed out that the business, engineering, and other professional schools in their college had gone to great lengths to help their graduates find jobs. Some commented that early childhood, and certain high school certified graduates had been aided by the school of education or by groups within the school. Many of them praised individual professors who had helped them, but very few had even a kind word for their college placement officials.

Even with the complaints, the vast majority of these middle school teachers agreed that they were

satisfied with their teaching positions, and that they planned to stay in the classroom.

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The Teacher in the Middle

by

Deborah A. Butler

As teachers of children in the middle, we are all well aware of this group's special and unique characteristics. No textbook or professor is needed to remind us what physical, psychological, and intellectual differences our students exhibit compared to younger and older students; we live with these uniquenesses each day.

A middle grades teacher for 6½ years, I've watched colleagues either leave these children in the middle as quickly as they could, or remain by choice because there was no other group they really wanted to teach. This latter group, the teachers who desired first and foremost to be middle level teachers, themselves either already had or soon developed unique qualifications for middle school teaching. Many studies and guidelines describing the special characteristics of the "ideal middle grades teacher" already exist, and I do not intend to add to them nor to develop my own prescriptive list of professional and personal qualities. Instead, I want to describe the unique situations, both behavioral and instructional, and the unique reactions to situations that experience tells me a middle grades teacher must be able to provide if both survival and thriving are to result.

Sense of Self

One insight I have gained from both my own and other teachers' experiences is that a middle grades teacher tends to get lost on the ladder of public education as much as children in the middle ever did. This occurs in two ways: in the eyes of the education profession itself, and sometimes in the eyes of our students.

Until recent years, middle grades teachers seemed stepchildren to the entire group of teachers--people "caught" in the middle rather than "chosen" for the middle. How well I remember my first few years as a junior high teacher surrounded by colleagues who entered our school in order to "get a foot in the door" and who could not wait until they were reassigned to a high school position. Many waited a few years for this move, always looking outward and elsewhere for their sense of

purpose, seldom finding a home right where they currently resided.

Sometimes, too, we teachers are lost in the memories of our children in the middle. It seems somehow easier for students to remember impressionistically the elementary teachers (possibly because of the intensity and length of time spent with a single teacher); and many students remember high school teachers because, at last, the capability and motivation for sustaining academic, specialized interest exists and ties could be formed through a common subject matter interest. But when children in the middle are with us, they are somewhat lost to themselves during these years of change. They spend their time with us when they are far more interested in self, socialization, new interests, and problems than in our classes and subject matter. When the middle grades child recollects these years, he or she usually does so through an overriding general affective response. We are usually less specifically remembered than other teachers.

To defeat this sense of "lostness," middle grades teachers must have the strongest egos, and the clearest senses of self and purpose of all teachers. We must be able to deal with less consistent feedback from students and from the profession itself while continuing to carry out eagerly our roles as teachers.

Drawing on the Different

In the previous section, I mentioned that when middle grades students are with us, they tend to be less interested in academics than in self and relationships with peers. This situation calls for the unique teacher with another special characteristic--the ability to draw these children toward learning. Good middle grades teachers I have known become harbingers of "strange" learning activities. I have seen more text-oriented, rote, factual learning in middle grades classrooms than I would care to tell anyone about, but I have also seen careful, conscious planning using a variety of approaches and exciting topics to help kindle interest in learning.

I clearly remember one eighth grade class coming to my room (after a social studies class) talking about what they just learned: "Mr._____ gave us a little envelope with pieces of paper cut up in them, and we had to read them and put them in groups! We're

supposed to use them to figure out what it is like to live in China." I knew they were talking about a sorting activity, designed as the first phase of an inquiry unit on China. It was not important for them to know how intellectually sound the strange activity was; it was important that they were excited and talking about the lesson.

This is an age group characterized by young individuals who are constantly changing, who are often moody and very unpredictable. Most teachers expect each day to yield strange and different occurrences. A unique middle grades teacher often goes one step beyond the introduction of strange and "different" activities; he or she allows the strangeness to permeate the style of teaching in the classroom. Of course, all teachers must maintain a sense of professionalism, but we middle grades teachers must be able to continually surprise children and enjoy surprising them, not only with activities, but with witty teacher commentary, behaviors, and mannerisms. We must know how and when to "let loose" and "be real." What this amounts to is the ability to perform a balancing act--between formal and informal behavior. The teacher masters the ability to become a creative reflection of the strangeness of this age.

Because these students must be drawn so consciously and originally toward learning experiences, the teacher must possess, or develop, a cluster of qualities supportive of the ability to "draw on the different." Enthusiasm, energy, and the capability to generate fresh perspectives allow the middle grades teacher to weave learning environments with a sense of warmth and humanness.

Deferring Personal Judgments

Of all school age groups, middle grades students are by far the group that most easily invites exasperated criticism from adults. There are reasons for this, of course. As I have already said, early adolescents are moody. They change their opinions as well as their likes and dislikes quickly. They counter your points made in class with arguments that seem one-dimensional, facile, and downright aggravating to an adult. They are usually not very accepting of your differing point of view, nor of the evidence supporting it. Yet, middle grades teachers, even more than other colleagues, must either possess or develop the ability to defer

judgment, to defer making negative evaluations of students as learners and as people. This ability to defer judgment at a time that so invites it (especially negative judgments) is absolutely critical in a middle grades teacher if a student's self-development and identity-seeking in adolescence are to occur without unnecessary negative feedback.

Middle grades students are in transition developmentally. They are not yet who they may become, and no teacher can risk forming subjective character judgments or academic judgments too early. (Of course, part of our responsibility is to diagnose problems and work with them, but this must always be done in a non-judgmental manner.) Encouraging positive behaviors and good work is important, and voicing negative observations will not help children grow.

If we middle grades teachers can become as knowledgeable as possible about adolescent psychological development, then this knowledge base will be the greatest aid to deferring judgments about children in the middle based on their behavior and performance in school. A middle grades teacher must develop the ability to see behavior while constantly interpreting what is seen, to interest while thinking about those interactions simultaneously. When a student seeks interpretation for his or her own behavior, we can then translate this psychological knowledge clearly and meaningfully to the child to help him or her firmly understand the transition being experienced. Until then, we should only explain and interpret behaviors and performances to ourselves and not constantly share them with our students.

This ability to defer judgments, like the other qualities, actually encloses several necessary characteristics of a middle grades teacher. Essentially, we as teachers must gain the ability to show "tough love," that is, patience combined with firmness. These qualities only grow when combined with a firm knowledge base about early adolescent development.

Authentic Awe

One other necessary characteristic must be developed by a middle grades teacher and that is the capability for "authentic awe." This term simply describes an openness to experiencing a true sense of wonder at a middle grader's learning, ideas, and

accomplishments. It means being genuinely and totally impressed with a child's growth and achievements. There is no room in a middle grades classroom for the constant automatic responses like "OK, good girl, Sally." Only genuine listening and experiencing should go on.

As a supervisor of middle grades student teachers, I frequently sit in classrooms and watch closely the interactions between students and teachers. Recently, I heard one of my student teachers lead a discussion in which every student's contribution was met with a perfunctory "good" or "very good." I had begun to wonder how the students read this constant comment when one boy leaned across to another in front of me, frowned, and whispered: "Everything we say is always so good." He grimaced and slumped back in his seat. Obviously, the automation of the comment was easily perceived and, I suspect, this perception worked against the lesson's effectiveness instead of achieving quality interaction.

On the other hand, I most remember another classroom in the same school I entered in which I could not find the student teacher because I didn't know with which group she was sitting on the floor; I could not readily distinguish her comments from the excited dialogue dominating each group. Responses were genuine from adult to child. While perhaps no one experienced absolute "awe," an obvious, sincere adult appreciation and respect for students and student ideas reigned in that class.

Summary

Unique situations and responses occur in any middle grades classroom; they are based on unique teacher qualities. Of course, anyone might argue that every teacher ought to possess a solid self-concept, wisdom about children, the ability to be child-like in a creative sense when appropriate, or the ability to accept people as they are. So how would these characteristics make a middle grades teacher unique? I am convinced that the special blend of all these qualities, coupled with the distinct person that each of us is, results in a unique teacher for a unique group of students.

Dr. Mary Strubbe is an Associate Professor of Social Studies Education at Model Laboratory School, Eastern Kentucky University. Drawing on her own survey of health habits of middle schoolers at the laboratory school, Dr. Strubbe combines this information with findings from various research readings and presents a report on the consequences of poor diet for children in the middle.

You Are What You Eat: Diet and Academic Performance

by

Mary A. Strubbe

> "Junk food is the food of the learning-problem generation" (Miller and Miller, 1979).

It is estimated that up to one third of school age children may be affected by educational problems ranging from learning disorders to discipline problems (Miller and Miller, 1979). Although many factors interact to create these problems, some are more controllable than others. An important, yet largely ignored, factor contributing to students' educational woes is diet. Inadequate nutrition adversely affects physical and intellectual development along with behavior patterns. A discussion of current dietary habits of American youth and the effects of these habits on academic performance follows.

Dietary changes in the United States reflect broader sociological and economic changes. Our population is largely urban and far removed from agricultural areas, thus requiring food to be shipped, processed and preserved. The number of working mothers is steadily increasing, making it more difficult to plan and prepare meals. As a result, young people frequently consume foods that do not provide for optimal development and academic performance.

The average American diet includes the annual consumption of 240 lbs. protein, 120 lbs. sugar, and less than 10 lbs. of grain (Miller and Miller, 1979). A typical diet is high in saturated fats and refined foods, including sugar. Consumption of sugar is approximately 19 times greater today than 150 years ago. High consumption of sugar upsets the blood sugar balance and may contribute to

diseased states. Dietary habits of learning disabled individuals often reveal the consumption of coke, sugar-coated cereals, cake, etc. for breakfast (Cott, 1977).

Inadequate dietary intake starts with breakfast, and breakfast provides the caloric fuel for the major portion of the school day. Nutritionists tend to concur that breakfast is the most important meal of the day, suggesting that one should eat breakfast like a king, lunch like a prince and dinner like a pauper. Yet studies reveal that young people's breakfast habits are often inadequate. The Massachusetts Department of Education found that only 5% of the elementary students regularly ate a nutritious breakfast (Hayden, 1975). A survey of the diets of fourth, fifth and sixth graders in the Roxbury district in Boston for four days indicated that 55% had "unsatisfactory" ratings for breakfast (Birch, 1972). Over one-fourth of the surveyed middle school students at the laboratory school where I teach consumed no breakfast, only a beverage or a beverage and bread product. Poor breakfast habits are frequently accompanied by similar eating habits throughout the day.

Such habits promote subnutrition[1] which causes apathy, loss of energy, difficulty concentrating, decreased environmental responsiveness, reduced ability to cope with stress and fatigue--all resulting in less learning time (Gift, Washbon & Harrison, 1972; Paige, 1972; Kerr, 1972; Birch, 1972). "Studies show that children who do not eat breakfast do less well in school and may be more irritable and emotionally unstable" (Krause, 1966, p. 457). A study conducted at the University of Iowa confirmed these findings.

> The teachers reported that on the no breakfast days the boys were careless, inattentive, and showed signs of fatigue, but on the days when breakfast was included, their attitudes and scholastic achievement were greatly improved. (Harris, 1970).

Breakfast appears to be an important factor in school productivity.

Diet not only affects day to day levels of productivity, but it also affects mental capacity. Most studies examining the relationship between I.Q.

and diet were conducted in third world countries where conditions of malnourishment were prevalent. Malnourishment during the formative years (0-5) retards mental development. The degree and permanence of intellectual impairment depends on the timing, severity and duration of the nutritional deprivation (Monckeberg, 1969; Birch, 1972; Cravioto, 1963).

Chronic subnutrition, which is prevalent in the United States, likely contributes to impaired intellectual functioning. Formal learning requires the ability "to process sensory information and to integrate such information across sense systems" (Birch, 1972). Undernutrition impedes this intellectual process. The prevalence of poor dietary habits amongst middle school students interferes with the development of formal reasoning skills. This concern becomes more acute due to the susceptibility of individuals to physical and mental impairment during periods of rapid growth (Monckeberg, 1969; Birch, 1972; Kerr, 1972). Prior studies focused on susceptibility during the first period of rapid growth in a human's life. Further study is needed to investigate the effects of chronic subnutrition on the intellectual development of rapidly growing transescents.

Undernutrition not only impedes mental development but also physical development. Poor nutritional habits delay the onset of puberty; if these habits are eliminated, growth will continue for 3-5 years beyond peers (Kerr, 1972). Studies suggest a positive relationship between physical growth and reading performance further indicating the interactive effects of diet, physical growth and intellectual development (Hurster & Archer, 1967). Delayed physical growth and difficulty learning place additional strains on the development of a positive self-image.

Hyperactivity and other behavioral disorders are frequently aggravated and occasionally caused by diet. It is estimated that 10-20% of school age children exhibit behavior disorders (Tkac, 1983). The prescription of over 100 million Ritalin tablets during the last decade underscores the growing magnitude of this problem (Schauss, 1981).

> For 40 percent, the problem is food allergies, such as sugar, milk, fruits or additives. For...10 percent the problem is high levels of

metals in the bloodstream, such as lead (Tkac, 1983, p. 31).

For the remaining 50%, consumption of large quantities of sugar and refined carbohydrates can result in a thiamine (B-1) deficiency, since B vitamins are largely removed in the refining process. Juvenile delinquents with thiamine deficiencies exhibited the following characteristics: "poor impulse control; easily angered; sensitive to criticism; easily irritated; and usually hostile and aggressive" (Schauss, 1981, p. 14). These symptoms disappeared after three weeks of thiamine supplements. Such examples reinforce the need for establishing balanced eating habits in order to optimize one's performance levels and feelings of well-being.

Food additives have also been indicted for contributing to hyperactivity. In the late 1960's, Dr. Ben Feingold designed a diet for hyperactive children which eliminated junk food, food coloring, and preservatives, processed foods, and fruits and vegetables containing natural salicylates. The effectiveness of this diet was supported in a double-blind study involving fifteen hyperactive children for twelve weeks. Those on the Feingold diet revealed significantly reduced hyperactive symptoms (Bricklin, 1976).

Food induced emotional reactions, more commonly referred to as food allergies, may also precipitate hyperactive behavior:

> ...(A)dverse reactions to foods can be one of the causes of hyperactivity, nervousness, stealing, learning problems, minimal brain dysfunction, depression, hostility, aggression, periods of confusion, and irritability (Schauss, 1981, p. 75).

Allergies can further interfere with the learning process by creating hearing and vocal problems. An analysis of eighty students over age eight with diagnosed allergies revealed that 50% had hearing or vocal problems. Reduced auditory acuity is related to lowered academic achievement (Baker, 1980).

Although this is by no means an exhaustive presentation of the relationship between diet and academic performance, it hopefully sensitizes the reader to the role that nutrition can play in the

optimal functioning of middle school students. At the same time, one must avoid oversimplifying the complex interactive series of factors that affect learning. Diet is only one of many factors that influence academic performance. Its importance derives from the fact that it is controllable and that early nutritional habits have a cumulative effect on one's health.

The rationale for being concerned about the nutritional habits of today's youth is aptly summarized by the Council on Food and Nutrition of the American Medical Association, "poorly nourished children will not reach their fullest academic potential and will most likely become 'handicapped adults'"(Cosper, Hayslip & Foree, 1977, p. 475).

Footnotes

[1]Brock (1961) defines "Dietary subnutrition... as any impairment of functional efficiency of body systems which can be corrected by better feeding." This definition is found in the following reference, Birch, Herbert G. "Malnutrition, Learning, and Intelligence." American Journal of Public Health. June 1972, 62, 774.

References

Baker, Barbara M. and Claude D. "Difficulties Generated by Allergies." Journal of School Health. December 1980, 50, 583-85.

Birch, Herbert G. "Malnutrition, Learning, and Intelligence." American Journal of Public Health. June 1972, 62, 773-784.

Bricklin, Mark. The Practical Encyclopedia of Natural Healing. Emmaus, Pennsylvania: Rodale Press, Inc., 1976.

Cosper, Barbara Anne; Hayslip, Donna E.; and Foree, Sherrell, B. "The Effect of Nutrition Education on Dietary Habits of Fifth-Graders." Journal of School Health. October 1977, 47, 475-7.

Cott, Allen. "Treatment of Learning Disabilities." In R.J. Williams and K. Dwight (Eds.), A Physician's Handbook on Orthomolecular Medicine. New Canaan, Connecticut: Keats Publishing, Inc., 1977.

Cravioto, Joaquin. "Application of Newer Knowledge of Nutrition on Physical and Mental Growth and Development." American Journal of Public Health. November 1963, 53, 1803-1809.

Gift, H. H.; Washbon, M.B.; and Harrison, G.G. Nutrition, Behavior and Change. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1972.

Harris, William H. "Survey of Breakfasts Eaten by High School Students." Journal of School Health. June 1970, 40, 323-5.

Hayden, Eugene B. "Breakfast and Today's Lifestyles." Journal of School Health. February 1975, 45, 83-7.

Hurster, Madeline and Archer, Morton. "Selected Parameters of School Achievement Among Urban Adolescents: A Study in Four New York City Junior High Schools." Journal of School Health. December 1967, 37, 511-18.

Kerr, George. "The Nutritional Correlates of Life: Growth and Learning." Journal of School Health. April 1972, 42, 191-6.

Krause, Marie V. Food, Nutrition and Diet Therapy. Philadelphia, PA: W.B. Saunders Co., 1966.

Miller, Saul and Miller, Jo Anne. Food for Thought. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1979.

Monckeberg, Fernando. "Malnutrition and Mental Behaviour." Nutrition Reviews. July 1969, 27, 191-93.

Paige, David M. "The School Feeding Program: An Underachiever." Journal of School Health. September 1972, 42, 392-95.

Schauss, Alexander. Diet, Crime and Delinquency. Berkeley, CA: Parker House, 1981.

Tkac, Debora. "Feeling Better With B Complex." Prevention. July 1983, 35, 28-32.

As with our previous article, the focus of the final two remains on the middle grades child. Both Drs. Wavering and Dickinson address mental maturation in early adolescence. Using his own research and others, Dr. Wavering discusses what we as educators should expect from our students as logical reasoners, and he suggests meaningful implications for instruction. Dr. Dickinson concludes the collection with a highly specific description of ways any adult might help the middle grades child move from the arena of concrete experiences to a world of abstract understanding. His article invites us to consider how we may best help the middle schooler develop positively.

Research and Logical Reasoning of Middle School Students

by

Michael J. Wavering

How can they think that way? Why can't they see it, if they only looked? These and many other questions will come to mind if you work with middle school students for any length of time. It is apparent that middle schoolers are different in many ways from the elementary school students they were and the high school students they will become. These differences are mental, physical and emotional. This paper will focus on the mental differences, that is, what can we as middle school educators expect from our students in the area of logical reasoning.

The work of Jean Piaget and his colleagues will serve as a starting point for understanding the domain of logical reasoning. Piaget theorized that logical reasoning is composed of stages: sensorimotor (birth to two years of age), preoperational (two to seven years of age), concrete operational (seven to eleven years of age), and formal operational (eleven years of age and above). Fundamental differences in reasoning exist at each of these levels. The lower levels of reasoning must develop prior to the development of higher levels of reasoning.

At the sensorimotor level body movement schemas are developed which enable the developing human to learn how the environment works. Grasping and sucking are two such schemas that develop during the sensorimotor stage. Another important development is the schema of object permanence. Up to a certain

time for an infant an object exists only while it is in sight. When the object is placed out of sight, it no longer exists. Sometime near the age of one year, objects become permanent in that if an adult placed an object behind his/her back, the child would follow the movement and reach for the hidden object. These types of sensorimotor schemas pave the way for more sophisticated developments in the preoperational stage.

In the preoperational stage of reasoning the symbolic function is developed. A symbol is an entity that can stand in place for another idea or object. In the sensorimotor stage, objects became permanent and had an identity in the developing mind of the child. In the preoperational stage objects become symbols for other objects. Play becomes symbolic, imitation has purpose, language develops, and drawings have meaning. In this stage inanimate objects are personified. For example, the wind may be thought of as an old man in the sky who is blowing air around. This is why a young child out playing may feel the wind is following him or her around. Once the symbolic function is fully developed the structures of concrete operational reasoning can start to form.

In the concrete operational stage of reasoning structures develop which enable the individual to perform mental actions (which are only possible because of the development of the symbolic function), which can accurately be referred to for the first time as logical reasoning. Operations refer to mental actions which are integrated with other mental actions and are reversible (an action can be mentally done and undone by reversing the direction of the action). At the level of concrete operations this type of logical reasoning can be structured initially only by experience with objects. This does not mean that logical reasoning cannot be done by the concrete operational reasoner if objects are not present, but that the initial building of all concrete operational structures is accomplished with objects. According to Piaget the concrete level of reasoning is composed of logical groupings (which are concerned with classification and ordering), infralogical groupings (which are concerned with topological, projective, and euclidean space, and time), and number and measurement groups which develop from the logical and infralogical groupings. The interrelationships of these structures is depicted in Structures of the

Concrete Operational Stage (Table 1). This is the domain of logical reasoning that most middle school students use in their encounters with their environment. By middle school most students have developed the structures represented by the groupings numbered 1, 2, 5, and 6 but still have not fully developed the groupings numbered 3,4,7,8, and measurement group 2. The development of the concrete

TABLE 1

Structures of the Concrete Operational Stage

LOGICAL GROUPINGS	INFRALOGICAL GROUPINGS		
STRUCTURES FOR CLASSES & RELATIONS	STRUCTURES FOR TOPOLOGICAL SPACE	STRUCTURES FOR PROJECTIVE SPACE	STRUCTURES FOR EUCLIDEAN SPACE
LG_1 PRIMARY ADDITION OF CLASSES	TOP_1 PARTITION OF SETS AND ADDITION OF SUB-SETS	PRO_1 ADDITION AND SUBTRACTION OF PROJECTIVE ELEMENTS	EU_1 ADDITION AND SUBTRACTION OF ELEMENTS
LG_2 SECONDARY ADDITION OF CLASSES	TOP_2 RECIPROCITY OF PROXIMITIES	PRO_2 COMPLEMENTARY PERSPECTIVE RELATIONS	EU_2 RECIPROCITY OF REFERENCES
LG_3 ONE-TO-MANY MULTIPLICATION OF CLASSES	TOP_3 ONE-TO-MANY MULTIPLICATION OF TOPOLOGICAL ELEMENTS	PRO_3 ONE-TO-MANY MULTIPLICATION OF PROJECTIVE ELEMENTS	EU_3 ONE-TO-MANY MULTIPLICATION OF EUCLIDEAN ELEMENTS
LG_4 ONE-TO-ONE MULTIPLICATION OF CLASSES	TOP_4 ONE-TO-ONE MULTIPLICATION OF TOPOLOGICAL ELEMENTS	PRO_4 ONE-TO-ONE MULTIPLICATION OF PROJECTIVE ELEMENTS	EU_4 ONE-TO-ONE MULTIPLICATION OF EUCLIDEAN ELEMENTS
LG_5 ADDITION OF ASYMETRICAL RELATIONS	TOP_5 ORDER OF PLACEMENT	PRO_5 RECTILINEAR ORDER	EU_5 PLACEMENT AND DISPLACEMENT OF OBJECTS
LG_6 ADDITION OF SYMETRICAL RELATIONS	TOP_6 SYMETRICAL INTERVAL RELATIONS	PRO_6 SYMETRICAL INTERVAL RELATIONS	EU_6 INCLUSION OF INTERVALS OR DISTANCES
LG_7 ONE-TO-MANY MULTIPLICATION OF RELATIONS	TOP_7 ONE-TO-MANY MULTIPLICATION OF TOPOLOGICAL RELATIONS	PRO_7 ONE-TO-MANY MULTIPLICATION OF PROJECTIVE RELATIONS	EU_7 ONE-TO-MANY MULTIPLICATION OF EUCLIDEAN RELATIONS
LG_8 ONE-TO-ONE MULTIPLICATION OF RELATIONS	TOP_8 ONE-TO-ONE MULTIPLICATION OF TOPOLOGICAL RELATIONS	PRO_8 ONE-TO-ONE MULTIPLICATION OF PROJECTIVE RELATIONS	EU_8 ONE-TO-ONE MULTIPLICATION OF PLACEMENT AND DISPLACEMENT RELATIONS

NUMBER GROUPS	MEASUREMENT GROUPS
N_1 ADDITIVE GROUP OF WHOLE NUMBERS	M_1 ADDITIVE MEASUREMENT GROUP (One-Dimensional)
N_2 MULTIPLICATIVE GROUP OF WHOLE NUMBERS	M_2 MULTIPLICATIVE MEASUREMENT GROUP (Two- and Three-Dimensional)

(Phillips, 1981)

operational structures is necessary for development of the formal operational structures.

Formal operational reasoning for Piaget represents the final stage of development of logical reasoning. In formal operational reasoning structures are developed which allow the individual to do second order reasoning. First order reasoning is reasoning directly from objects and the transformations they undergo; possibilities are subordinate to reality. Second order reasoning is reasoning about reasoning, reality is just one of all possibilities. The structures of formal operational reasoning include the INRC group (a group of four operators which are used to transform logical statements into other possible logical statements having the same conditions), the combinatorial system (a system which consists of all possible combinations a logical statement can have), and the formal operational schemata (these are general schemas which are used when certain types of data are the subject of logical manipulation). The eight formal operational schemata are: the combinatorial operations, proportions, coordination of two systems of reference and the relativity of motion or acceleration, concept of mechanical equilibrium, probability, correlation, multiplicative compensations, and the forms of conservation which go beyond direct empirical observation. As can be seen from this list formal operations includes some familiar ideas such as proportions, probability, separation and control of variables and combinations as well as some ideas which are not so readily thought of such as correlation or multiplicative compensation.

The formation of these structures depends on physical maturation (such as brain growth and motor development), experience with the environment, socialization (experience with others), and equilibration. All of these are necessary but are not sufficient by themselves for development of logical reasoning. The mechanism of equilibration needs further explanation. Equilibration is the self-regulatory mechanism which governs the growth of logical reasoning. Twin forces drive this form of adaptation, there are assimilation and accommodation. Assimilation allows the individual to integrate new sensory data into the present set of structures by making it similar to the data that the structures have processed in the past. Accommodation takes place when new data can only be processed if

new structures are formed in the brain of the individual to process the data. Assimilation takes place all the time. Accommodation takes place less frequently and sometimes takes place when individuals have the "Eureka" or "I see" experience.

Research by my colleagues and myself has corroborated other research into logical reasoning, that the vast majority of middle school students are developing structures at the concrete operational level. A very small number are beginning to develop formal operational structures and even these rely mainly on concrete operational reasoning, especially under stress.

Preliminary findings of a three year longitudinal study of a group of middle school students by my colleagues and myself provide an interesting profile of logical reasoning in this group. The study focused on reasoning as displayed on tasks that measure logical grouping 8 (ordering along two dimensions), projective grouping 8 (reasoning concerning how an object appears from different points of view in space), euclidean grouping 8 (intersection of lines to determine the placement of objects), measurement group 2 (measurement in two and three dimensions), separation and control of variables, and proportional reasoning. These areas where chosen for investigation to determine order of attainment, growth in logical reasoning in each area, the importance of spatial reasoning as a bridge between the logical groupings and formal operational reasoning, and the normal mode of reasoning for students in the middle school. In the two areas of formal operational reasoning measured there was some growth toward more sophisticated forms of reasoning, but this growth was almost exclusively in the concrete operational levels that precede formal reasoning. Students started out highest on ordering along two dimensions and remained that way at the end of three years. The largest number of students reached the highest level of reasoning on this task. Also considerable growth was shown by students on the projective space task and measurement in two and three dimensions. The least amount of growth was shown on the euclidean space task. There seems to be a link between the development of logical reasoning at the formal level and the spatial tasks. This is important because spatial reasoning is the most neglected area of the curriculum and in daily living.

Another research study conducted by the author

which included middle school students is concerned with the development of logical reasoning needed for making a graph. Students were given data and asked to make a graph with the data using unlined paper and a ruler. Students graphed data that gave a straight line which increased, a straight line which decreased, or a curve which increased. The results showed most middle schoolers made graphs as they thought they were taught, which means they did not think about why they did what they were doing. Some did not establish a one-to-one correspondence between the two pieces of data that determined a point, some did not order the data points from high to low but graphed them in the order they were given (which was in a random order), some graphed them in order but did not establish a scale on one or both of the axes, a few scaled their axes and plotted the points, and even fewer could describe a relationship that the plotted data represented. The decreasing line and the curve presented special problems which some students overcame by changing the data around to put it in a more familiar form (usually something that would make a straight line).

What is the value of this theory or logical reasoning development and the research that comes from it to the middle school teacher? First, students come to the classroom with naive theories concerning the way the world works. This type of research enables educators to know more about the mental world of the student. The more educators know about these naive theories the better able they are to design instruction that is appropriate and effective for each student. Second, this research supports the existence of definite and knowable changes in logical reasoning that are the same for each individual, but also that each individual is not at the same stage of development at the same grade level or at the same time of year in a grade level. Instruction that takes this into account must have a high component of individualization. Third, spatial reasoning is an important prerequisite to the development of formal reasoning. Spatial reasoning is a neglected part of the middle school curriculum and its inclusion must be planned. Components of spatial reasoning are potentially present in all areas of the middle school curriculum and as a consequence all middle school teachers need to be prepared to deal with these spatial components. Fourth, middle school students have not fully developed

all the concrete operational structures. It is known that the development of these structures depends on interaction with objects. Therefore, middle school instruction should rely heavily on hands-on activities that require the student to logically reason about interrelationships that are present or are being created. This needs to be done at many levels and along several dimensions. Finally, it is important that all educators, not only those at the middle school, become aware of and put to use research findings. Improvement of instruction can then occur in a systematic way and not be left to chance discoveries or to idiosyncratic reports of "this is what works for me."

Suggested Reading

Inhelder, B. and J. Piaget. The Growth of Logical Thinking: From Childhood to Adolescence. New York: Basic Books, 1958.

Inhelder, B. and J. Piaget. The Early Growth of Logic. New York: W.W. Norton, Inc., 1964.

Kelsey, Linda J., B. Perry, and M. Wavering. "An Investigation of the Order of Attainment of the Mental Structures For Six of Piaget's Logical, Infralogical and Formal Tasks." submitted to the Journal of Research in Science Teaching, 1983.

Phillips, D. "Piaget's Model of Intellectual Development: Deriving Classroom Applications." In Robert E. Yager, (Ed.), What Research Says to the Science Teacher (Vol. 4). Washington, D.C.: National Science Teachers Assoication publication 1982.

Phillips, D. The Structures of Thinking. (Second Preliminary Edition), Iowa City, Iowa: The Science Education Center, The University of Iowa, 1981.

Wavering, M. "Middle Schoolers--Is There Any Logic?" Eastern Kentucky Educational Review, Fall, 1982.

Wavering, M. "More Graphing and Logical Reasoning," National Science Teachers Association Annual Convention, Dallas, Texas, April 7-10, 1983.

Wavering, M. and Linda J. Kelsey. "Reasoning About Spatial Relationships," in Science and the Early Adolescent compiled by Michael J. Padilla, National Science Teachers Association, 1983.

Wavering, M., B. Perry, Linda J. Kelsey, D.Birdd, "The Performance of Students in Grades Six, Nine and Twelve on Five Logical, Spatial and Formal Tasks." submitted to the Journal of Research in Science Teaching, 1984.

The Middle School Years--A Time To Look Ahead

by

Thomas S. Dickinson

For Christmas I bought my 14-year old daughter a camera--one of the new, smaller-format 35mm's. While it looks almost like a toy, it has all the features and can perform all of the functions of my 35mm SLR. When I showed it to my father, a veteran of brownie box cameras who remembers the invention of color film, he asked me, "Why? And especially at that price? For an adolescent who knows nothing about photography?"

I had to stop and think because the question was important. Why had I purchased this complex and precision-built instrument for a teen-ager? And I found the answer, the one that had been my primary motivation even on a subconscious level.

My reply to my father was, "To look ahead." I was not vitally concerned with the pictures (even snapshots) that my daughter would take now, next week, next month, even next year. No, I was interested in looking ahead to that time in the future (ten, even fifteen years) when she would be able to "see" with her eye and her brain, to compose in the view-finder, and capture her perceptions of reality on film.

A Time To Look Ahead

The middle school years should be a time for adults to look ahead. These years should be seen as a time for parents and educators--the major adults in a transescent's life--to help co-create the young adolescent's future through acts that are performed in "the now." Since adults can envision the future, they have a responsibility to purposefully effect a difference in the lives of their children. To do this they must plan opportunities involving both skill and self-development that bring rewards now and will help them in the future.

Adults can best accomplish these present-and-future tasks by setting contexts for learning. Schools also have to begin setting contexts for students, rather than attempting to mandate from on high. Concerned with the fate of transescent youth as they are, adults must strive to remember that this is the critical turn-off period in human growth and development. We must be supportive of the adolescent's learning while at the same time charting what is

most necessary for them.

The camera I bought my daughter was one attempt I made to set a present and future context. It will begin the groundwork for an anticipated life-long involvement with photography. It will provide her with some fundamental conceptions about light and shadow, distance and focus, and film types. The camera will also give her present-time rewards (it already has) that in and of themselves are extremely valuable. And it will also give her markers--photographic benchmarks, if you will--along her route to the time ahead.

Trying to link the present and the future causes one to pause and reflect whether there is (or even can be) a link forged between the present and the future. I feel that there is a link, and it is a link that focuses on the individual and her needs that will be present regardless of educational, societal or cultural changes. But this is also a link that the young adolescent cannot totally make for herself without the help of the adults in her life.

Links

What can parents, teachers, administrators, and guidance professionals do to shape both "now" and "then"? What can we do to help provide those links? We need to ask ourselves what activities, but even more importantly, what responsibilities do these transescents need?

Let me return to the camera. It is an extremely complex instrument. For my daughter to use it well she must read (purposefully) about it in her instruction booklet, photography books and magazines, and even the literature that is provided inside film-container boxes. She must record data on the images she produces (her ever-present shirt-pocket Smurf notebook) and defer her gratification and examination until the finished product is returned. She must provide the physical care (cleaning, storage) for a delicate technological product. And, she must set her own directions, explore her own realities and fantasies (her eye/brain sees cats, woods, rotting tree-stumps, and panoramic views). All these are here-and-now but linked to the future, especially the back-and-forth nature of developing hand-and-eye/reality-and-vision--the mental ripening of waiting, reflection, critiquing, and reapplication. And so, this is the criteria for providing answers

to the question in a meaningful way.

And the effect of providing worthwhile responsibilities for young adolescents also has another characteristic--I call it "spreading." "Spreading" is that long recognized situation of self-enhancement by good work. The most necessary link that should be begun with the middle school years is the development of a sense of potency and self-worth. By building on rewarding acts now that can find application and continued validation in the future, the adolescent will be focusing on both tangible benefits in the present as well as future vistas. "Spreading" is another way of describing what Erikson saw as the "industry vs inferiority" life stage. My daughter's look-ahead camera tasks have affected her sense of self. She has discovered a different edge, another arc of her personality-potential. Grounded in her new abilities, she has developed new confidences in her ability to take hold and control another aspect of life. Additionally, my daughter has developed new sensitivities for the natural world that surrounds her. The "spreading" also occurs in another way. Adults (those who are in their own adolescent future) take on new meanings for her--as teachers, as guides, as goers-on-before; as individuals who can share, respond, and enjoy the tasks of the adolescent. My daughter's reflections upon my own photographic efforts have given her one concrete example of failures, stumbling efforts, inner visions, are practiced successes. And they have provided an avenue for bridging the distances between our generations.

Summary

What does all this mean? Let me summarize what I have said about the child in the middle and the time ahead. First, it means an examination (once more--it should be a daily activity) of the needs of the child. Without this recognition as the basic starting point we will be (literally) shooting film with the lens cap still attached to the camera.

Secondly, it means providing middle school children with tools--skills, abilities, attitudes, and responsibilities--that have application both now and in the future. No middle school child should have to ask the question "Why am I learning this?" They should be engaged in active, productive lessons that have relevent meaning for them as individuals.

Third, it means providing positive feedback to

individuals about these learning activities that will help build a sense of self-worth--for the individual, of the process, and of the product. Deliberate, overt, caring affirmations are needed.

Finally, it means overt sharings of adults as past and present learners. Individuals who covertly role-model their own emergence through sharing perspectives, information, and points-of-view rather than directing-without-involvement are vital for the growth and development of middle school youth.

Three short months have elapsed since the purchase of the camera. In that short space of time my daughter has discovered light-and-shadow (and its frustrations and fulfillments) through her first use of black and white film, photographic chemistry (here the knowledge would amaze her science teacher), and the economics of world silver prices as they relate to film costs. She has also manifested a new understanding of the carnage and waste of war, this from viewing the works of Matthew Brady and Larry Burroughs. I believe the photographic thread that links the Civil War and Vietnam is visible to her and in sharp focus. What she does with this knowledge/emotion may ultimately prove to be more powerful than all her other newly acquired skills and abilities.

All this from a camera? Well, not really, but at the same time, yes. Maybe all this from an opportunity to look ahead. Thus far, this father likes what he sees.

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